



NOTES MYCOPLASMA

MICROBE OVERVIEW

- Smallest free living organisms
- Prokaryotic with absence of cell wall, presence of flexible cell membrane containing cholesterol
 - Pleomorphic
 - Not visible on Gram stain
 - Resistant to beta lactam, glycopeptide antibiotics
- Limited metabolic activity → not culturable on standard culture media, require specialized medium (e.g. Eaton's agar) with sterols, nutrients provided by natural animal protein (e.g. blood serum)
- Can grow under aerobic, anaerobic conditions

MYCOPLASMA PNEUMONIAE

osms.it/mycoplasma-pneumoniae

PATHOLOGY & CAUSES

- Species of mycoplasma; primarily affects respiratory tract; usually causes upper respiratory tract infections; can also cause atypical pneumonia
- Transmitted through respiratory droplets after close contact with infected individual → attaches to respiratory epithelium with P1 surface protein → hydrogen peroxide, superoxide radicals synthesized by mycoplasma interact with endogenous toxic molecules synthesized by host cells → oxidative stress in respiratory epithelial cells
- Macrophages migrate to site of infection → activation and phagocytosis → initiate inflammatory response → T, B lymphocyte proliferation → antibody production, release of inflammatory cytokines → control infection/initiate immune-mediated lung injury
- Extrapulmonary disease (rare)
 - Due to immune mediated injury/cross reactive antibody mechanism/direct invasion
- Central nervous system (CNS), joints, skin, blood, heart, liver, pancreas affected
 - CNS is the most common extrapulmonary site; usually encephalitis
- Can develop cold agglutinin response (60%)
 - Autoimmune hemolytic anemia
 - Coombs positive
 - Cold (active below 37°C/98.6°F) IgM antibodies against erythrocyte surface antigen due to cross reaction of antigen with mycoplasma antigens → can agglutinate/lyse erythrocytes

RISK FACTORS

- Common in **children, young adults**
- Immunocompromised status, smoking, close community living (e.g. nursing homes, dorms)

COMPLICATIONS

- Asthma exacerbations
- Respiratory failure
- CNS involvement

VISIT...

LANZAROTE
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- Encephalitis with high mortality rate
- Heart involvement
 - Rhythm disorders, heart failure

SIGNS & SYMPTOMS

- Can be asymptomatic
- Gradual onset
 - General fatigue, myalgias, headache, low grade fever, sore throat, cough (worsening, frequent, non-productive), chills
- Less common
 - Sinus/ear pain, wheezing
- Chest auscultation
 - Scattered rales, wheezes, rhonchi, crackles
- Sinus tenderness
- Erythema of tympanic membrane
- Pharyngeal erythema
- **Pulse-temperature dissociation:** normal pulse despite fever indicative of atypical pneumonia

DIAGNOSIS

LAB RESULTS

- Molecular testing with polymerase chain reaction (PCR); most accurate
- Serological tests
 - $\geq$ four-fold rise in IgM antibodies titers of acute, convalescent sera 2–3 weeks apart using enzyme immunoassay
 - High titer of IgM antibodies
 - Cold agglutinins titer
- Isolation with culture
 - Limited use due to slow growth (2–3 weeks), need for specialized media

DIAGNOSTIC IMAGING

Chest X-ray/CT scan/high resolution CT scan

- Diffuse reticulonodular pattern indicative of interstitial pneumonia
- Areas of airspace consolidation (esp. lower lobes)
- Thickening of bronchovascular bundle

OTHER DIAGNOSTICS

- Histopathology
 - Inflammation in trachea, bronchioles, peribronchial tissues
 - Airspaces filled with purulent exudate with polymorphonuclear cells
- Physical examination
 - Vague symptoms (e.g. fatigue) indicative of atypical/“walking” pneumonia

TREATMENT

- Most cases mild, self-limited

MEDICATIONS

- Atypical pneumonia
 - Macrolides (e.g. erythromycin, azithromycin); tetracyclines (e.g. doxycycline); fluoroquinolones (e.g., levofloxacin, moxifloxacin)